

CLAIMS

1. A heat-insulating container comprising:

a paper cup body with a bottom, which has an inner surface coated with a polyolefin resin and is provided with an outward curled portion formed at an upper opening end of the cup body and at least one horizontal rib formed on a side wall of the cup body so as to project outward therefrom; and

an inverse-frustoconical paper sleeve provided with an inward curled portion formed at a lower end of the sleeve,

the cup body and the sleeve being integrally combined with each other so that an upper end of the sleeve is joined to an outer periphery of the side wall of the cup body, which is adjacent to the outward curled portion of the cup body, and an inner surface of the inward curled portion of the sleeve is joined to an outer periphery of a lower portion of the side wall of the cup body.

2. A heat-insulating container according to claim 1, wherein a plurality of horizontal ribs is provided as said at least one horizontal rib.

3. A heat-insulating container according to claim 1 or 2, wherein said at least one horizontal rib extends continuously over an entire periphery of the side wall of the cup body.

4. A heat-insulating container according to claim 1 or 2,

wherein said at least one horizontal rib extends intermittently in a circumferential direction of the side wall of the cup body.

5. A heat-insulating container according to any one of claims 1 to 4, wherein a heat-insulating corrugated member is arranged between the sleeve and an upper portion of the side wall of the cup body.

6. A heat-insulating container comprising:

a cup body having a side wall and a bottom disposed on one end of the side wall, the side wall being provided with an outward projecting rib extending in a circumferential direction thereof and being provided at another end thereof with an outward curled portion; and

a sleeve disposed outside the side wall with leaving a space therebetween and bonded to the side wall in a bonding area defined so as to be adjacent to the outward curled portion of the cup body,

wherein the outward projecting rib is disposed only on an area apart from the bonding area.

7. A heat-insulating container according to claim 6, wherein the sleeve is provided at one end thereof with an inward curled portion capable of contacting an outer periphery of the one end of the side wall.

8. A heat-insulating container according to claim 6, wherein

the side wall of the cup body is provided with an inward projecting rib extending in the circumferential direction thereof.

9. A heat-insulating container according to claim 8, wherein the inward projecting rib functions as a line indicating a proper level of liquid poured into the cup body.

10. A heat-insulating container comprising:

a cup body having a side wall and a bottom disposed on one end of the side wall; and

a sleeve disposed outside the side wall with leaving a space therebetween and bonded to the side wall;

wherein a rib indicating a proper level of liquid poured into the cup body is provided on the side wall so as to project inward therefrom.

11. A heat-insulating container comprising:

a cup body having a side wall and a bottom disposed on one end of the side wall, the side wall being provided at another end thereof with an outward curled portion; and

a sleeve disposed outside the side wall with leaving a space therebetween and bonded to the side wall in a bonding area defined so as to be adjacent to the outward curled portion of the cup body;

wherein the side wall is provided with an inward projecting rib included in the bonding area.

12. A producing apparatus for combining a sleeve on an outer

periphery of a cup body to produce a heat-insulating container comprising:

- a sleeve forming section for forming the sleeve by curling a blank sheet cylindrically and joining both ends thereof; and

- an assembling section for combining the sleeve on the outer periphery of the cup body;

 - wherein the assembling section comprises;

 - a rib-processing device for processing a rib on a side wall of the container;

 - an adhesive-applying device for applying an adhesive agent on the side wall of the cup body formed with the rib; and

 - a sleeve-delivering device for putting the sleeve formed by the sleeve forming section on the outer periphery of the cup body on which the adhesive agent is applied.

13. A producing apparatus for combining a sleeve on an outer periphery of a cup body to produce a heat-insulating container comprising:

- a sleeve holder capable of holding the sleeve;

- a cup holder capable of holding the cup body; and

- a driving device for circulating the sleeve holder and the cup holder along respective certain circulation paths,

 - wherein the apparatus is provided along the circulation path of the sleeve holder with a curling device for curling up a sheet-like blank on the sleeve holder and for joining both ends of the curled blank to each other and a sleeve-ejecting device for removing the sleeve

from the sleeve holder;

the apparatus is also provided along the circulation path of the cup holder with a cup-body-supplying device for supplying the cup body to the cup holder, a rib-processing device for processing a rib on a side wall of the cup body set on the cup holder, an adhesive-applying device for applying an adhesive agent to the side wall of the cup body formed with the rib, and a sleeve-delivering device for receiving the sleeve ejected by the sleeve-ejecting device and for putting the received sleeve on the outer periphery of the cup body on which the adhesive agent is applied; and

the driving device drives the sleeve holder and the cup holder in such a manner that the cup body on which the adhesive agent is applied is carried in the sleeve-delivering device when the sleeve on the sleeve holder is carried in the sleeve-ejecting device.

14. A producing apparatus according to claim 13, wherein a end-curling device for processing a curled portion on one end of the sleeve is provided on the circulation path of the sleeve holder.

15. A producing apparatus according to claim 13, wherein a sleeve-fitting device for pressing the sleeve which is put on the cup body by the sleeve-delivering device toward the cup body with aligning the sleeve with respect to the cup body is provided on the circulation path of the cup holder.

16. A producing apparatus according to claim 13, further

comprising a blank-supplying device for supplying the blank to the curling device, the blank-supplying device being provided with an adhesive applicator for applying an adhesive agent to one end of the blank.

17. A producing apparatus according to claim 16, wherein a sealing device for pressing both ends of the blank overlapped by the curling device to each other is provided on the circulation path of the sleeve holder.

18. A sleeve forming apparatus for forming a sheet-like blank into a sleeve used as an outer package of a heat-insulating container, comprising:

a mandrel having a body portion which is capable of being fitted inside the sleeve and which is shorter than the sleeve;

a curling device for curling up a blank on the mandrel in such a manner that one end portion of the blank to which an adhesive agent is applied is located under another end portion of the blank to form a joint line;

a main-sealing device for pressing the joint line onto the mandrel;

an assist-sealing device for nipping one end portion of the joint line, which projects from the mandrel by a pair of nippers;

an end-curling device for pressing a projecting portion of the blank, which projects from the mandrel, toward the mandrel to form a curled portion of the sleeve; and

a sleeve-ejecting device for removing the sleeve from the mandrel.

19. A sleeve forming apparatus according to claim 18, further comprising a blank-supplying device for supplying the blank to the curling device with applying the adhesive agent to the one end of the blank.

20. A sleeve forming apparatus according to claim 18, further comprising:

a conveyor capable of circulating along a predetermined circulation path and having mandrel-attachment portions arranged along the circulation path with leaving a certain interval therebetween, each of the attachment portions being provided with the mandrel; and

a driving device for moving the conveyor intermittently by a pitch corresponding to the interval between the mandrel-attachment portions to feed the mandrel on each of the mandrel-attachment portions step by step with respect to a plurality of stations defined along the circulation path;

wherein the curling device, the assist-sealing device, the end-curling device and the sleeve-ejecting device are distributed to the stations in such a manner that the mandrel is fed to the curling device, the assist-sealing device, the end-curling device and the sleeve-ejecting in this described order in accordance with movements of the conveyor.

21. A sleeve forming apparatus according to claim 20, wherein the main-sealing device is movable along the circulation path together with the mandrel.

22. A sleeve forming apparatus for forming a sheet-like blank into a sleeve used as an outer package of a heat-insulating container, comprising:

a conveyor capable of circulating along a predetermined circulation path;

a plurality of mandrels arranged on the conveyor so as to leave a certain interval therebetween in a circulation direction of the conveyor;

a driving device for moving the conveyor intermittently by a pitch corresponding to the interval between the mandrels to feed each of the mandrel step by step with respect to stations defined along the circulation path;

a blank-supplying device for supplying the blank to a curling station selected from the stations with applying an adhesive agent to one end portion of the blank;

a curling device for curling up the supplied blank on each of the mandrels in such a manner that said one end portion of the blank is located under another end portion thereof to form a joint line;

a sealing device for pressing both end portions of the blank, which forms the joint line, to each other; and

a sleeve-ejecting device provided in an ejecting station which is selected from the stations and is located forward from the curling

station in the circulation direction for removing the sleeve from each of the mandrels.

23. A sleeve forming apparatus according to claim 22, wherein each of the mandrels has a body portion which is capable of being fitted inside the sleeve and which is shorter than the sleeve, and wherein the sealing device comprises a main-sealing device for pressing the joint line of the blank to each of the mandrels and an assist-sealing device for nipping one end portion of the joint line, which projects from each of the mandrels, by a pair of nippers.

24. A sleeve forming apparatus according to claim 23, wherein the assist-sealing device is provided in an assist-sealing station selected from the stations and located between the curling station and the ejecting station.

25. A sleeve forming apparatus according to claim 24, wherein an end-curling device for processing an curled portion on a projecting portion of the blank, which projects from each of the mandrels, is provided in at least one end-curling station selected from the stations and located between the assist-sealing station and the ejecting station.

26. A sleeve forming apparatus according to claim 20 or 25, wherein the stations include at least two end-curling stations, each of which is provided with the end-curling device.

27. A sleeve forming apparatus according to claim 18 or 22, wherein the sleeve-ejecting device removes the sleeve from each of the mandrels by pressing a roller onto the sleeve fitted on each mandrel with rotating the roller about an axis perpendicular to an axis of each mandrel.

28. A sleeve forming apparatus according to any one of claims 18 to 27, wherein the conveyor comprises a turn table capable of turning about a predetermined axis.

29. An assembling apparatus for combining a sleeve on an outer periphery of a cup body to produce a heat-insulating container, comprising:

- a conveyor capable of circulating along a predetermined circulation path;

- a cup holder mounted on the conveyor and having a rotary portion capable of rotating about an axis thereof with holding the cup body thereon;

- a driving device for moving the conveyor to feed the cup body step by step with respect to stations defined along the circulation path;

- a holder driving device provided in a driving station which is selected from the stations and capable of being connected with the rotary portion of the cup holder in the driving station to rotate the cup holder;

- an adhesive-applying device provided in an applying station which is selected from the stations and is located forward from the

driving station in a circulation direction of the conveyor and capable of applying an adhesive agent on an outer periphery of the cup body; and

a sleeve-delivering device provided in a delivering station which is selected from the stations and is located forward from the applying station in the circulation direction and capable of putting the sleeve on the cup body.

30. An assembling apparatus according to claim 29, wherein the rotary portion of the cup holder is provided with a disk-like rotation input portion coaxial with the cup body, and the holder driving device comprises a rotation output portion and a drive power source for rotating the rotation output portion.

31. An assembling apparatus according to claim 29, wherein the adhesive-applying device is provided with a nozzle ejecting the adhesive agent toward the outer periphery of the cup body.

32. An assembling apparatus according to claim 29, wherein the cup holder is provided with an abutment portion capable of being brought into contact with an inner surface of a side wall of the cup body, and the holder driving device comprises a press mechanism capable of pressing a predetermined model member to the abutment portion with nipping the side wall therebetween to process the side wall.

33. An assembling apparatus according to any one of claims

29 to 32, wherein the conveyor comprises a turn table capable of turning about a predetermined axis.

34. An assembling apparatus for combining a sleeve on an outer periphery of a cup body to produce a heat-insulating container, comprising:

a cup holder capable of holding the cup holder in an inverted posture in a vertical direction;

a sleeve-delivering device capable of putting the sleeve on the outer periphery of the cup body held on the cup holder from the upper side thereof; and

a sleeve-fitting device having a jig capable of contacting an end portion of the sleeve put on the cup body in an axial direction thereof, the sleeve-fitting device being capable of pressing the jig toward the cup body to arrange the sleeve and the cup body with each other in an axial direction thereof;

wherein the jig is provided with an aligning equipment capable of engaging with the sleeve before the sleeve is pressed down by the jig to move the sleeve in a radial direction thereof so as to be aligned with the cup body.

35. An assembling apparatus according to claim 34, wherein the aligning equipment comprises pins arranged around the axis of the cup body on the cup holder.

36. An assembling apparatus according to claim 35, wherein

each of the pins is supported by a jig body of the jig so as to be movable in the vertical direction, and a lower end portion of each of the pins is formed with a tapered or rounded portion capable of contacting a lower end of a side wall of the cup body, which surrounds a bottom of the cup body.

37. A rib-processing apparatus for processing a rib on a side wall of a cup body so as to extend in a circumferential direction of the side wall comprising:

a male and a female model members disposed opposite to each other with putting the side wall therebetween, the male model member being provided on a portion facing the female model member with a projection to form a concave side of the rib, and the female model member being provided on a portion facing the male model member with a groove to form a convex side of the rib;

a radial direction driving device for moving at least one of the male and the female model members in a radial direction of the cup body so as to let the male and the female model members close to and away from each other;

a circumferential direction driving device for making a relative rotation between the cup body and at least one of the male and the female model members to change a position at which the side wall is nipped between the male and the female model members in the circumferential direction.

38. A rib-processing apparatus according to claim 37, further

comprising a cup holder capable of rotating about an axis thereof with supporting the cup body from an inside thereof,

wherein the cup holder is provided with one of the male and the female model members, another one of the male and the female model members is disposed on an outer periphery of the cup body, the radial direction driving device moves said another one of the male and the female model members in the radial direction of the cup body, and the circumferential direction driving device rotates the cup holder.

39. A rib-processing apparatus according to claim 38, wherein said one of the male and the female model members provided on the cup body extends continuously over an entire periphery of the side wall of the cup body.

40. A rib-processing apparatus according to claim 38, wherein a roller rotatable about an axis parallel to an axis of the cup body is provided as said another one of the male and the female model members disposed on the outer periphery of the cup body.

41. A rib-processing apparatus according to claim 38, further comprising a restraining device for preventing the cup body from rising up from the cup holder.

42. A rib-processing apparatus according to any one of claims 37 to 41, wherein the male model member is provided inside the cup body, and the female model member is provided outside the cup body.

43. A rib-processing apparatus for processing a rib on a side wall of a cup body so as to extend in a circumferential direction of the side wall comprising:

a cup holder capable of rotating about an axis of the cup body with holding the cup body from an inside thereof;

a rotary drive mechanism for rotating the cup holder; and

a press mechanism which is provided on one side of the cup holder and which has a press roller rotatable about an axis parallel to the axis of the cup body and a driving power source for moving the press roller reciprocally in a radial direction of the cup body,

wherein one of a groove for forming a convex side of the rib and a projection for forming a concave side of the rib is provided on an outer periphery of the press roller, and another one of the groove and the projection is provided on the cup holder so as to accord a position thereof in a direction parallel to the axis of the cup holder with a position of said one of the groove and the projection provided on the press roller.

44. A rib-processing apparatus according to claim 43, further comprising a conveyor for conveying the cup holder through a plurality of processes, wherein the rotary driving mechanism and the press mechanism are provided intermediate positions of a conveying path of the conveyor.

45. A process for forming a rib on a side wall of a cup body so

as to extend in a circumferential direction of the cup body, comprising by the steps of:

nipping one part of the side wall of the cup body by a male and a female model members, the male model member being provided on a portion facing the female model member with a projection to form a concave side of the rib, and the female model member being provided on a portion facing the male model member with a groove to form a convex side of the rib; and

making a relative rotation between the cup body and at least one of the male and the female model members to change a position, at which the side wall is nipped between the male and the female model members in the circumferential direction of the side wall.

46. A process according to claim 45, wherein the cup body is held from an inside thereof by a cup holder capable of rotating about an axis of the cup body, the cup holder is provided with one of the male and the female model members, another one of the male and the female model members is pressed on a side wall from an outside thereof to nip the side wall between the male and the female model members, and under this condition, the cup holder is rotated.

47. A process according to claim 45, wherein a bottom of the cup body is pressed down to the cup holder when the side wall is nipped by the male and the female model members.

48. A process according to any one of claims 45 to 47, wherein

the male model member is disposed inside the cup body, and the female model member is disposed outside the cup body.